CONSTRUCTION OF MPE REMEDIATION SYSTEM

EXTRACTION WELLS

A total of three extraction wells (RW-1 through RW-3) were drilled on October 7 and 8, 2003 by O'Malley Drilling of Omaha, Nebraska. The extraction wells were drilled to a depth of 26-feet below grade using 6.25-inch hollow stem augers. The extraction wells were screened from 11 to 21-feet below grade with four-inch diameter Schedule 40 PVC, 0.02-inch slot screen, and were completed with a 5-foot sump at the bottom. The filter pack consisted of 16-30 grade silica sand and extended from the bottom of the boring to a depth of nine-feet below grade, or two-feet above the screened portion of the well. Wells were sealed with hydrated bentonite chips on top of the filter pack, and bentonite grout to a depth of four-feet below grade. The locations of the recovery wells are depicted on the Site Map included in **APPENDIX A**. The recovery well construction is depicted on the Process and Construction Diagram included as **APPENDIX B**.

Following installation, well development was completed by surging and removing approximately 10-gallons of groundwater from each well with a submersible pump.

TRENCHING AND PIPING DETAIL

EPS and RDG completed the trenching from the remediation trailer location to each of the extraction wells. The trenches were excavated with a backhoe to a depth of four feet below grade and were two feet wide. Following grading of the bottom of the trench, the following horizontal conveyance piping was installed: ¾-inch Schedule 80 PVC pneumatic pump air supply line, two-inch Schedule 40 PVC pneumatic pump discharge line, and three-inch Schedule 40 PVC soil vapor extraction line. The treatment system piping joints and fittings were solvent cemented and the trench was bedded with compacted sand backfill to a depth of approximately eight-inches below grade.

The trenching detail is provided on the Process and Construction Diagram included as **APPENDIX B**. Well heads are protected with 30-inch diameter traffic rated steel access vaults flush mounted and set in concrete.

WELLHEAD CONSTRUCTION

The top of casing on each recovery well is equipped with a four inch air tight Schedule 40 PVC well clincher adapted to accept the pneumatic pump air supply and discharge lines. SVE lines were attached to the well through a "tee" coupler located below the well head. The well head detail is illustrated on the Process and Construction Diagram included as **APPENDIX B**.

MPE SYSTEM TRAILER AND EQUIPMENT

The remediation equipment was supplied by EPG Companies, Inc. of Maple Grove, MN. The MPE remediation equipment is housed within an 8-feet x 20-feet mobile trailer located near the northeast corner of the Kersten Auto Co. building. The mobile trailer is composed of a non-explosion proof control room and an explosion proof process and operations room. The control room houses the control panel and air compressor and the operations room houses the oil/water separator, transfer and discharge pumps, shallow tray air stripper and soil vapor extraction blower. A 560-gallon free-product tank is located outside the trailer. A photocopy of the Operations & Maintenance Manual is included in **APPENDIX C**. The manual includes a list of the MPE remediation equipment within the trailer, a floor plan layout, cut sheets for the equipment, electrical schematics, and photographs of the MPE remediation system trailer.

Soil Vapor Extraction Blower

As mentioned above, MPE consists of submersible pneumatic pumps and a surface pump/blower. The surface pump/blower also referred to as the soil vapor extraction (SVE) blower

is used to extract soil vapor from the subsurface and enhance free product recovery. The SVE blower for this site consists of a five horsepower (HP) Rotron regenerative blower with a 230 volt, three-phase explosion proof motor. The blower is equipped with a condensation water condensate filter separator with tank full sensor/sight tube, manual drain, vacuum relief valve, vacuum gauge, and air bleed valves.

Submersible pneumatic pumps

The submersible pneumatic pumps at this site are Clean Environment AP4T total-fluids, controllerless pneumatic pumps. These pumps are capable of nine gallons per minute (gpm) for a maximum total flow rate of approximately 27 gallon per minute (gpm), however the actual pumping rate is less than a gpm. A recovery well and pump detail is depicted in the Multiphase Extraction Remediation System Process and Construction Diagram included. A 7.5-hp Ingersoll-Rand air compressor with an 80 gallon tank provides air to the pneumatic pumps. Air to the pneumatic pumps is controlled by a 1/2" discharge solenoid valve.

Oil/Water Separator

The oil/water separator at this site consists of an EPG Model OS-8 constructed of fiberglass. This separator is capable of flows up to 25 gpm. The oil/water separator is equipped with a high level sensor and site tube. The separate free product gravity feeds from the oil/water separator to the 560-gallon free product tank that is located outside the remediation trailer. The free product tank is double wall steel and equipped with a high level sensor that upon activating closes the above mentioned solenoid valve which stops the discharge from the submersible pneumatic pumps. The recovered groundwater gravity drains to a 150 gallon poly transfer tank prior to be pumped through the air stripper. The poly transfer tank is equipped with a 3-point level sensor and ½ hp transfer pump.

Air Stripper

Groundwater is treated with an EPG-STAT80-4 tray low profile air stripper. The stripper is stainless steel construction and is equipped with a 3 hp blower. The treated water is discharge from the air stripper sump with a ½ hp discharge pump. The pump is controlled by the 3-point level sensor located on the air stripper sump. The City of Bloomfield allowed connection to the sanitary sewer for discharge of treated groundwater. A connection fee of $250 was assessed by the City of Bloomfield. Water samples will be collected from the influent and effluent of the remediation system on a monthly frequency and submitted for laboratory analysis in order to monitor contaminant concentrations within the effluent discharge and estimate the hydrocarbon mass removal. The water samples will be collected within laboratory supplied containers and laboratory analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and pH in accordance with the applicable laboratory methods. The influent and effluent sampling ports are depicted on the Multiphase Extraction Remediation System Process and Construction Diagram.

The following effluent limitations shall be maintained.

Benzene limitation: 40 µg/L, monthly average

Total BTEX: 750 µg/L, monthly average

pH limitation: 6-9 standard units

Control Panel

The system is controlled by an EPG-Series 525 controller. The controller is 230 volt, 3-phase, NEMA 4 enclosure with main disconnect. A 100 amp electrical service was supplied to the MPE system equipment trailer by Kuchar Electric of Bloomfield, Nebraska. NPPD installed the power drop and provides electricity to the site. The remediation system is equipped with an auto-dialer designed to contact EPS via telephone if a fault condition exists. Great Plains Communications provided the telephone line to the remediation system trailer.

MPE SYSTEM OPERATION & MAINTENANCE

The following MPE System operation sections describe remediation system operation and maintenance activities for the start-up. Since the remediation system was recently started this section does not include any operations data.

OPERATION & MAINTENANCE SUMMARY

In accordance with the remediation action plan dated July 2, 2003, the MPE remediation system performance data shall be submitted semi-annually to the NDEQ. The progress summaries shall include remedial system operation summary and include the hydrocarbon mass removal volume for the reporting period, the volume of product removed and disposed, and a discussion of equipment problems and down times. Further, the progress summary shall include a discussion of the remediation system effectiveness. Graphs will be included illustrating the cumulative volume of product, groundwater, and hydrocarbons extracted from the site. All wastewater and air discharge analytical results and water level fluctuations will be tabulated. Photocopies of laboratory reports and chain of custodies shall be included. Additionally, the progress summary shall include any recommendations for modifications to the remediation system.

In order to estimate the hydrocarbon mass removal achieved by the SVE system, the SVE exhaust flow rate will be measured using a VelociCalc meter and air samples collected from the SVE exhaust and analyzed for gasoline constituents with colorimetric Sensidyne tubes. Air samples collected with charcoal tubes and an individual sampling pump will be collected quarterly from the SVE exhaust and submitted for laboratory analysis using method NIOSH 1501.

EPG Companies Inc.

List of Equipment

Environmental Protection Solutions, Inc. – Kersten Auto

EPG Job # 03-6428

3 / 5 each — CEE-AP4STHB1
CEE Short AP4T, pneumatic pump, 3/4" hose barb top loading controllerless, tough, light-weight fiberglass reinforced plastic (FRP) pump casing, and stainless steel support harness - includes 4" Well cap with holes, zinc-coated eyebolt on top for pump support rope, and filter/regulator for 3/8" hose, 25' of 1" discharge hose, and 25' of 1/2" air supply hose.

1 each — 2475N7.5
Compressor Package, Ingersoll-Rand Model 2475N7.5, 24 CFM rated, splash lubricated reciprocating, with 7½ HP, 230 V, 3Ø, ODP motor, NEMA 1 starter, pressure switch, 80 gallon tank, 115 V tank drain, particulate filter, coalescing oil filter, pressure regulator with gauge, aftercooler, 115 V refrigerated dryer, 1/2" discharge solenoid valve, piping, and startup kit (extends warranty on pump to 2 years).

1 each — EPG-OS8
Oil/Water Separator, 1-25 gpm, Model OS8, stand mounted with hold down brackets, fiberglass construction, FLO-PAK media, expanded effluent chamber, high level sensor/sight tube, and gravity product drain

1 each — 150GAL-CD100AI
Transfer Tank & Pump, approximately 150 gallon poly transfer tank with fittings, 3-point level sensor, transfer pump with 1/2 HP, 230 V, 3PH, explosion-proof motor, from oil/water separator to air stripper, with sample port and fittings.

1 each — EPG-VES-RT5
Vapor Extraction Package, with Rotron EN707 regenerative blower, 5 HP, 230 V, 3Ø, XP motor, vacuum relief valve, vacuum gauges (2), temperature gauges (2), dilution air valve, CS-16b condensate filter separator with tank full sensor/sight tube, manual drain, discharge silencer, discharge sample port, and piping.

1 each EPG-STAT80-4
Low-Profile Air Stripper, STAT 80, 4-Tray, skid mounted, stainless steel construction, demister, influent/effluent flanges, latches/fasteners, gaskets, blower, 3 HP, 230 V, 3Ø, explosion-proof motor, inlet filter, explosion-proof low pressure switch, pressure gauge, sample ports (2), 3-point level sensor/sight tube, discharge pump, check valve, control valve, discharge flow meter, air flow meter kit, and piping - Based on 25 gpm of 55 degree F water with 8,770 ppb Benzene and discharge of less than 40 ppb, and total VOCs of less than 750 ppb.

1 each EPG-Series 525
EPG Series 525 Controller, UL listed, 230 V, 3Ø, NEMA 4 enclosure with main disconnect, to control pneumatic pumps with solenoid valve, open-close-auto switch, green open indicator light, intrinsically safe product tank full sensor, red high level alarm light, intrinsically safe high level sensor for OWS, red high level alarm light, intrinsically safe 3-point transfer tank sensor, red high level alarm light, transfer pump, (H)OA switch, green run light, air stripper blower, HOA switch, green run light, off-delay timer, low air pressure switch, red low air pressure alarm light, intrinsically safe air stripper sump 3-point level sensor, red high level alarm light, discharge pump, (H)OA switch, green run light, vapor extraction blower, HOA switch, green run light, elapsed time meter, intrinsically safe high condensate level sensor, red high level alarm light, alarms reset push button, 4-channel alarm autodialer, GFCI outlet, E-Stop (all motors) enclosure in equipment room, and power for lights, heaters, and fans - all indicator lights push-to-test.

1 each SXT8.520TA35
Enclosed Trailer, ~8'X20'X7' height, square body style, dual 3,500 lb. axles with electric brakes, double rear doors, partition wall of 3/8" plywood construction and silicone seal, 36" curb side door, scissor jack, insulated walls and ceiling, two-way side wall vents for each room, louver vents in doors, plywood floor and walls, explosion-proof and non-explosion-proof exhaust fans, explosion-proof and non-explosion-proof heaters, explosion-proof lights and switch, non-explosion-proof light and switch, GFCI outlet, AutoCAD design drawings, conduit, wire, mounting of control panel, and mounting, piping, and wiring of all equipment - Includes freight to the site (off-loading by others).

1 each TFS-25SJ
Tank Full Sensor, for product tank (supplied by others), 2" MNPT junction box and 25' of SJ cord.